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THESIS

THE PEARL HARBOR FLEET MAINTENANCE PILOT PROGRAM: CONVERSION FROM THE NAVY WORKING CAPITAL FUND TO APPROPRIATED FUNDING

by

John S. Turner

June 2002

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THE PEARL HARBOR FLEET MAINTENANCE PILOT PROGRAM: CONVERSION FROM THE NAVY WORKING CAPITAL FUND TO APPROPRIATED FUNDING

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During fiscal year 1999, the Navy conducted the Pearl Harbor Fleet Maintenance Pilot program, converting the Pearl Harbor Naval Shipyard from a revolving fund activity to merge with the Naval Intermediate Maintenance Facility and consolidate under appropriated funding. This research will relate the complexities of change during the Pearl Harbor Pilot, specifically with regard to the two distinct types of funding methods used at the Depot and Intermediate Maintenance Facilities: revolving funds (Navy Working Capital Fund) and appropriated funds (mission funds), respectively. The primary research goal is to define the advantages and disadvantages of accounting for the consolidated operations at the Pearl Harbor Shipyard and Intermediate Maintenance Facility with appropriated funding. To provide an analysis of this topic, results of the Pearl Harbor Pilot performance metrics will be studied and the two types of funding will be compared and contrasted. Results of the Pilot program are mixed and are still open to debate two years after the conclusion of the test. Implications for the Marine Corps Maintenance Depots are paralleled to the current dilemma facing the Navy on whether to continue the success of the Pilot or to reorganize again under a revolving fund system.

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I. INTRODUCTION

A. DISCUSSION

1. Naval Ship Maintenance and the Background for Change

In 1992, the Chief of Naval Operations (CNO), Admiral Frank Kelso, defined the term "regional maintenance" to describe a new concept of streamlining maintenance activities to become more cost effective and to reduce the infrastructure of the Navy's maintenance facilities. The past dozen years have brought about force reductions in the Department of Defense (DoD) and with that, continuous searches for improvements in quality and efficiency. The Chief Financial Officer (CFO) Act of 1990, and the Government Performance and Results Act (GPRA) of 1993, have set the tone for all federal government services to follow in their quest for the most efficient practices.

Further defining his maintenance goals in 1994, the CNO established a three phased Regional Maintenance Program (RMP) with the following concepts: [Ref. 1]

- Consolidate intermediate-level maintenance activities to create efficient practices.
- Integrate intermediate and depot-level maintenance activities with management by the Fleet commanders.
- Conduct fleet maintenance using a single maintenance process.

Embracing these concepts, and specifically the second concept above, the Navy launched a pilot project on April 30, 1998, consolidating management, operations, and funding of the Naval Shipyard (NSY) and the Intermediate Maintenance Facility (IMF) at Pearl Harbor (Pearl Harbor Pilot). Pearl Harbor was the logical location for this pilot project because of the close proximity between the NSY and the IMF. The two facilities were just minutes from each other and in some cases, lay within sight of each other across the harbor. However, consolidating these two facilities was a major undertaking. There were fundamental differences in the types of work, employees, and financing between the NSY and the IMF that had to be addressed when considering such a change. The barriers to be overcome were those same fundamentals that drove the operations of depot-level maintenance at the NSY and intermediate-level maintenance at the IMF.

2. Naval Maintenance Hierarchy

The Naval service classifies maintenance actions according to three categories: [Ref. 2]

- **Organizational** - basic maintenance activities that are accomplished at the individual unit level. Both preventive and corrective maintenance are considered as organizational-level maintenance. Examples of organizational-level maintenance would be seen as a ship's crew making repairs while underway.

- **Intermediate** - significant repair work beyond the capability of individual units. The majority of workers at intermediate-level maintenance facilities are active duty Sailors and Marines. Examples of intermediate-level maintenance are engine overhauls, metal work, or more technically demanding tasks.

- **Depot** - major repair and replacement work consisting of the most technically demanding tasks. The majority of workers at depot-level maintenance facilities are highly trained and certified civilian employees. Examples of depot-level maintenance are engine replacement, major system upgrades, or life cycle overhauls. All U.S. naval shipyards are depot-level maintenance facilities.

3. Funding Differences

This research will relate the complexities of change during the Pearl Harbor Pilot, specifically with regard to the two distinct types of funding methods used at the depot and intermediate maintenance facilities: revolving funds (Navy Working Capital Fund) and appropriated (mission) funds, respectively.

- **Revolving Funds** - funds of which all income is accrued through its operations and are available to finance the activity's continuing operations without fiscal year limits. A revolving fund activity accepts an order from a customer, finances the costs of operation using its "working capital," and bills the customer, who then reimburses the fund for the service or performance of work. [Ref. 3] Traditionally, depot-level maintenance is operated as a revolving or "Working Capital" fund.

- **Appropriated Funds** - funds that are authorized by Congress and made available for obligation towards a specified purpose. Most intermediate and organizational-level maintenance are budgeted in the Operation and

Maintenance (O&M) appropriations. These "mission" specific funds expire annually. Traditionally, intermediate and organizational-level maintenance activities are operated by the obligation of appropriated or "mission" funds.

B. PURPOSE

The purpose of this research is to document the significant accomplishments, challenges, benefits, and drawbacks of the financial system conversion of the Pearl Harbor Fleet Maintenance Pilot Program. This study will discuss the significant issues and lessons learned to consider when future programs undertake similar financial management system conversions.

This research will analyze the events throughout the merger of the Pearl Harbor depot and intermediate maintenance facilities and the conversion of financing from revolving to appropriated funding. The objective is to identify key success factors as well as the disadvantages and unresolved issues of this financial system conversion.

The primary research goal is to define the advantages and disadvantages of accounting for the operations of the Pearl Harbor Naval Shipyard and Intermediate Maintenance Facility (PHNSY & IMF) with appropriated funding, as compared to maintaining two separate facilities with both revolving and appropriated funds.

C. SCOPE

The purpose of this research is to document the financial management conversion of the PHNSY & IMF from revolving funds to appropriated funds. The benefit of this analysis will be realized with parallels that can be drawn towards similar financial management conversions. The focus is upon the implementation and financial aspects of the merger of the PHNSY & IMF. Included will be before and after financial and non-financial performance measures to determine if value was added as a result of this merger. Conclusions will include a discussion of whether a similar transfer of financial systems is worthy of consideration for Marine Corps depot maintenance facilities.

D. METHODOLOGY

The methodology used in this thesis research consisted of the following steps:

- Conducting a literature search of government reports, magazine articles, and other library information resources.
- Conducting interviews with key financial and information technology personnel of the Commander in Chief, Pacific Fleet (CINCPACFLT) staff and the PHNSY & IMF.
- Conducting a review of DoD, DoN, and USMC orders and directives regarding the operations of the Navy Working Capital Fund and appropriated fund maintenance activities.
- Collecting and comparing data from CINCPACFLT, PHNSY & IMF, Headquarters Marine Corps (HQMC) and Marine Corps Material Command (MARCORMATCOM).
- Comparing data/information among sources to identify advantages and disadvantages of the funding transition during the Pearl Harbor Pilot.
- Presenting lessons learned for consideration by Marine Corps depot maintenance facilities.

E. ORGANIZATION

The thesis is organized as follows:

- Chapter I is the Introduction.
- Chapter II defines revolving funds and highlights their principles in regard to this thesis.
- Chapter III defines appropriated funds and illustrates their use in regard to this thesis.
- Chapter IV discusses the consolidation of the PHNSY & IMF.
- Chapter V discusses findings and recommendations for further research.

II. REVOLVING FUNDS AND THE PEARL HARBOR NAVAL SHIPYARD

A. HISTORY OF REVOLVING FUNDS

Revolving funds are those funds of which all income is accrued through its operations and are available to finance the activity's continuing operations without fiscal year limits. Activities that use revolving funds are based upon the principles of identifying full costs, recovering all costs, and balancing their workload to precisely match those costs. These activities accept orders and provide goods or services to customers financed by appropriated funds and perform the work using their "working capital," or operating cash corpus. This corpus, or body of cash, is a one-time appropriation, or lump-sum transfer of money to begin the operations of a revolving fund activity. [Ref. 3] In turn, the customers are billed at stabilized rates (predetermined charges per measurable job) to provide reimbursement to the revolving fund, more commonly referred to as the Working Capital Fund (WCF). This revolving cycle is the basis that allows continuous operations without regard to fiscal year (FY) constraints (the U.S. Government FY begins each October first).

Revolving funds have existed in the Navy since the 1870s. Known as the General Account of Advances, this early revolving fund was used to finance the procurement of supply inventories. [Ref. 4] The National Security Act Amendment of 1949 formally authorized the establishment of revolving funds within the DoD. [Ref. 3] Previous to the present day system of working capital funds, there existed different forms of revolving funds to support various activities and services as necessary. Each component of the Defense Department maintained separate funds for goods and services, existing under Stock Funds and Industrial Funds, respectively. Stock Funds were used to finance various classifications of supply; such as repair parts, fuel, clothing, food, and medical items. Industrial Funds were used to finance various services that the military depended upon for its existence; such as vehicle and weapon repairs, research and development, and ground and aviation depot maintenance.

The Defense Business Operations Fund (DBOF) was created in FY 1992 with the purpose of transforming the DoD revolving fund activities into more business-like management practices. The DBOF consolidated all Stock and Industrial Funds into one centrally managed DoD fund. The Under Secretary of Defense (Comptroller) (USD(C)) was responsible for the overall performance and management of the DBOF. However, after just a few years of operations, the DBOF was decidedly too large and cumbersome (nearly $70 billion in FY 1997) for central DoD management. [Ref. 4]

Abolishing the DBOF in FY 1997, the USD(C) established four major working capital funds: the Defense-wide WCF, the Air Force WCF, the Army WCF, and the Navy WCF (NWCF). Each service was given responsibility for the efficient management of its own revolving fund. Total cost visibility was maintained and the individual working capital funds were relatively easier to manage because of their service-specific scope. However, even these improvements did not necessarily lead to improved financial performance of the working capital fund activities. There are inherent difficulties in the entire concept of working capital funds that make the principle of "breaking-even" very hard to attain. These difficulties lie in accurate predictions of how much work is to be performed during a single fiscal year and from that, what is the stabilized rate to be charged per unit of work. Stabilized rates will be described further in the next section of this chapter.

B. CONCEPTS

1. Establishing a Working Capital Fund

There are four criteria an activity must satisfy in order to determine whether it may be included as part of the Defense Working Capital Fund: [Ref. 4]

- The activity must have an identifiable output of products or services.
- The activity must possess a cost accounting system that collects and identifies the full costs of operations.
- The activity must have a defined customer or set of customers.

- The activity must be able to evaluate itself versus the customer (buyer versus seller) and identify how a buyer has the power to impact cost by changing the demand for goods or services.

The Pearl Harbor Naval Shipyard met all of these requirements and had historically operated as a revolving account for nearly 50 years under Industrial Funds, the DBOF, and finally the NWCF. It supported U.S. naval vessels stationed in and passing through the Hawaiian Islands and conducted a small percentage of reimbursable work for ship alterations and inactivations, as well as from ground units from different services and agencies in Hawaii. [Ref. 1]

2. Budgeting for a Working Capital Fund

Working capital funds are initially funded by a small body of cash, or corpus, to enable them to begin operations. Throughout the fiscal years, work is performed and is funded largely from the Operation and Maintenance (O&M) appropriation on a reimbursement basis from the activity's customers. Once these funds are transferred into a working capital funding system, there is no fiscal year deadline placed upon the obligation (a legal contract to make a future payment of money) of these funds. The customers who conduct business with working capital fund activities plan, program, and budget reimbursable funds into their annual budget request to be spent at those activities. These no-year funds are matched at the working capital fund activities during their budget formulation process and are the resources that drive their daily operations once they are authorized and appropriated by Congress.

The Planning, Programming, and Budgeting System (PPBS) is the process for creating and managing DoD financial resources. The purpose of this system is to produce a set of plans and programs and finally a budget to support the entire Department of Defense. [Ref. 4] The Program Budget Decision (PBD) is prepared during the budget phase of this highly complex annual system. This document is issued during a joint review of the individual services' budget submission. This review is conducted by

members of the Office of the Secretary of Defense (OSD) and the Office of Management and Budget (OMB), and they recommend changes to particular programs for the Deputy Secretary of Defense to issue within each PBD.

All of the various working capital fund activities that are affected within a budget year receive a draft copy of the PBD to reflect the proposed decision made during the review. They are addressed to the individual activity group that manages the specific function within the particular working capital fund activity. [Ref. 4] For example, at Pearl Harbor, the activity group manager is the Commander, Naval Sea Systems Command (COMNAVSEA). Naval Sea Systems Command is responsible for the depot maintenance operations for all shipyards throughout the Navy. As such, it is the activity that responds to any adjustment or request for information issued within a draft Program Budget Decision addressed towards Navy Ship Depot Maintenance.

Once all responses to the draft PBD are made, the final PBD for working capital fund activities documents changes to the previous fiscal year rates, approves stabilized billing rates for the new fiscal year, and approves funding levels for Congress to appropriate towards working capital fund customer accounts. [Ref. 4] The Congressional appropriation process will be described further in Chapter III.

3. Rate Formulation and Stabilized Rates

The relationship between the former Pearl Harbor Naval Shipyard (and any WCF activity) and its customers was an important one: from the customers came workload estimates which then drove the Shipyard planners to budget for a stabilized workload, workforce, and rates to be charged for specific work. However, the customers could not accurately estimate how much work they could afford until they knew the stabilized rate. This "Catch-22" situation usually resulted in both the stabilized rate and the customers' workload estimates being inaccurate, and led the shipyard to not recover all the costs of operation.

A Navy Working Capital Fund depot activity such as the former PHNSY typically has the goal of performing its work throughout the year towards recovering all costs, or

"breaking even." The mechanism to achieve this goal is through an accurate budget process and establishing annual stabilized rates.

Customers are requested to project workload estimates to the working capital fund activity approximately two years prior to a new fiscal year. For ship maintenance, these projections are derived from scheduled ship maintenance availabilities and the best judgments from Commanding Officers and Maintenance Departments regarding typical or historical depot level maintenance that is likely to occur throughout the future fiscal years. These workload estimates drive the development of the working capital fund activities' stabilized rates, but because they are projected two years in advance, both the workload estimates and the rates often contain variances from the actual work performed and rates charged.

The Direct Labor Hours (DLH) are calculated after the workload estimates are received. This is based upon the total time needed to accomplish the estimated workload. Since working capital fund activities must recover all costs, the direct labor rate computation includes workers' base pay plus health insurance, retirement, and other fringe benefits.

Then, the total costs are calculated. This step includes all direct, indirect, and general and administrative costs. These costs are defined further: [Ref. 5]

- Direct costs consist of charges for labor, material, and contractual services directly attributable to the work performed.
- Indirect costs, also known as overhead, are those charges associated with more than one, but not all jobs performed. Examples could be supervisor salaries or office support costs for a specific work (or cost) center.
- General and Administrative (G&A) costs are those charges distributed to all job orders, such as executive management salaries or security system costs.

Together, these costs comprise the Cost of Goods Sold (CoGS) estimate. Dividing the CoGS estimate by the DLH estimate yields the initial rate for work at a working capital fund activity. Finally, the initial rate is adjusted accordingly for the past years' gains or losses.

The overarching principle in any working capital fund activity is to recover the full costs of operation. This is realized by achieving an Accumulated Operating Result (AOR) equal to zero; i.e. where revenues equal the operating expenses over the lifetime of the activity (the AOR is a cumulative measure that reports the performance of a working capital fund activity or activity group spanning the entire operation). This concept is difficult to achieve in reality and costs often exceed revenues because of unanticipated expenses. Most individual working capital fund activities will accept negative annual Net Operating Results (NOR) in order to maintain their stabilized rate, and thus not affect their customer's purchasing power. However, it is the parent working capital fund activity group that strives to achieve an AOR equal to zero. By carefully managing its subordinate activities, it may authorize some activities to operate towards a loss, while other activities are directed to operate at a level such to recoup those losses.

Sometimes, due to fortunate circumstances (material price decreases or less labor is required than budgeted for a certain task), the NOR may be positive. In this case, rates are reduced the following budget cycle and savings are passed on to the customer. Conversely, if the NOR is negative, rates are increased the following budget cycle and the losses are passed on to the customer. These gains or losses are reflected as a percentage decrease or increase, respectively, in work unit rates from the previous year.

The following is an example of the previous concepts: Listed below are fiscal years zero, one, two, and three for an individual working capital fund activity. To the left, the Net Operating Results and the Accumulated Operating Results are noted. The NOR is the yearly ending financial outcome of the activity. The AOR is simply the sum of the year-to-year results of the NOR. Beginning in Year 0, there is not yet a NOR, and the AOR is equal to $0. The NOR for Year 1 yielded a loss of $500. Therefore, the AOR for Year 1 is likewise a loss of $500. At the completion of Year 2, the NOR is positive $700. When added to the AOR from the previous year, the AOR for Year 2 results in $200. Finally in Year 3, the activity finishes the year with a negative NOR of $1000. To find the Year 3 AOR, the previous years' AOR, $200, is added to the current year's NOR, thus yielding a final AOR of a $800 loss.

	Year 0	Year 1	Year 2	Year 3
NOR =	-	($500)	$700	($1000)
AOR =	$0	($500)	$200	($800)

The simple example above illustrates the NOR and AOR for a single working capital fund activity. In practice however, this concept is expanded across an entire working capital fund activity group. As the WCF activity group manager conducts the end-of-year assessment of the groups' AOR, individual activity's gains or losses are distributed to optimally achieve an AOR equal to zero across the entire activity group.

C. DEPOT MAINTENANCE

The Pearl Harbor Naval Shipyard operated as any depot maintenance facility under the Navy Working Capital Fund. According to the FY 1997 PHNSY Analysis of Capital Fund, the facility generated negative net operating results from year to year since the inception of the Defense Business Operations Fund in FY 1992 and throughout its time in the NWCF. These year-to-year results, or accumulated operating results at Pearl Harbor totaled greater than $43 million in losses at the end of FY 1997. [Ref. 2] Further, WCF activities had failed to accomplish the goal of operating on a break-even basis, leaving a defense-wide negative AOR of $1.7 billion at the conclusion of FY 1997. [Ref. 6]

An additional problem of the PHNSY (as well as with most depot maintenance facilities throughout the DoD) was that of excess capacity. The infrastructure of the PHNSY, to include both facilities and personnel, was simply too great to provide cost effective service to its customers. Reductions in customers' workload estimates further compounded this problem, providing less work for the shipyard's annually budgeted workforce; thus increasing its effective cost per unit output.

A General Accounting Office (GAO) report estimated 40 percent excess capacity throughout the DoD's depot maintenance system. The same report also forecasted PHNSY to have 30 percent daily excess capacity during FY 1999 (before the inception of the Pearl Harbor Pilot). [Ref. 6] Excess capacity occurs when the existing infrastructure

(facilities and manpower) of a supporting activity is underemployed and may be a direct result of poor workload estimates, as described previously. In a WCF activity, the overhead costs of infrastructure still need to be recouped, regardless of the activity's gainful employment. Thus, excess capacity plays a significant contribution towards the overall inefficiencies of defense depot maintenance and the ineffective management of WCF activities.

The defense downsizing of the 1990s presented both a significant opportunity and necessity to find more efficient and effective uses of funds. The Chief Financial Officer Act of 1990 and the Government Performance and Results Act of 1993 have directed the services to find those practices, implement them, and document the results. The Navy responded with the Regional Maintenance Program in 1994 and established seven objectives: [Ref. 7]

- Emphasize process improvement to maintain customer responsiveness and Fleet readiness
- Eliminate excess maintenance infrastructure
- Better integrate supply support and maintenance requirements
- Provide maintenance cost visibility
- Provide compatible automated data processing (ADP) management across all levels of maintenance
- Maintain positive technical control
- Reflect DoD and Navy Core Competencies Policy

The Navy realized that to achieve these objectives, a major shift in the organizational-intermediate-depot maintenance hierarchy would need to be effected. With that, the Pearl Harbor Pilot emerged to serve as a model for the integration of intermediate and depot maintenance operations, personnel, and facilities under a unified command: the Pearl Harbor Naval Shipyard and Intermediate Maintenance Facility. This pilot project would attempt to fully exploit the advantages of a combined workforce, customer base, and funding source while overcoming the historical financial inefficiencies associated with the shipyard's involvement in the NWCF.

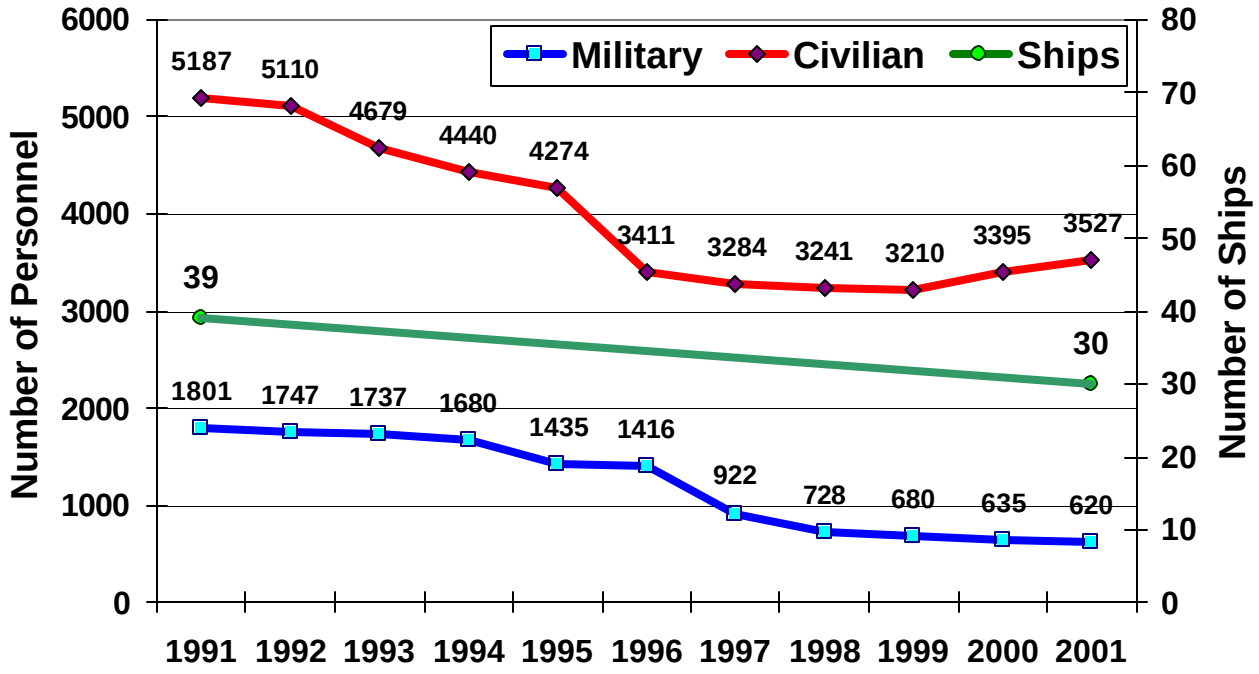

Figure 1. Pearl Harbor Workforce History, 1991 – 2001 [From Ref. 8]

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III. APPROPRIATED FUNDS AND THE PEARL HARBOR NAVAL INTERMEDIATE MAINTENANCE FACILITY

A. OVERVIEW

Appropriated funds are authorized by Congress and made available for obligation towards a specified purpose, for a certain dollar amount, at a specified time. Traditionally, intermediate-level and organizational-level maintenance activities are operated by the obligation of appropriated funds versus depot-level maintenance and its typical use of working capital funds. Appropriated funding in regard to Naval maintenance is also known as "mission" funding, i.e., funds are provided to cover the operating costs of the maintenance activity versus customers (the operating Fleet) directly paying for those costs. There are many appropriations that make up the Navy's budget, but it is the Operation and Maintenance appropriation that comprises the bulk of mission funds. These funds are expressly appropriated for certain operating costs, such as civilian salaries, the purchase of supplies, the funding of travel orders, or Naval ship maintenance. Operation and Maintenance funds expire annually for obligation purposes. To understand the goals behind the execution of "mission" funds, an understanding of the budgeting and appropriation process is necessary.

B. BUDGETING AND APPROPRIATION OVERVIEW

The budgeting and appropriation process occurs each year with the formulation of the Federal budget. The President, the Congress, the Office of Management and Budget (OMB), and the various Federal departments and agencies all play major roles in the budget process. Under the DoD, the Navy begins its annual budget process each spring for the fiscal year following the next. For example, in spring of calendar year 2001, the Navy would begin the budget process for FY 2003.

The budget seeks to provide visibility, justification, priorities, and dollar amounts for all programs throughout the Navy for the particular fiscal year and projections for the

following five years. The Navy budget is forwarded to the DoD for review and subsequent inclusion in the entire Defense budget. The DoD (and all other Federal departments and agencies) submits its budget request, future years' projections, and supporting material to the President during December or January. The OMB assists the President by validating each item in the various budget requests. Once complete, the law requires the President to submit the Federal budget to Congress by the first Monday in February for the coming fiscal year.

Congress begins its portion of the budget process by using the President's budget and passing the budget resolution, which sets the framework and overall budget totals for the next fiscal year. Congress then begins the process of holding hearings to validate programs, authorize their existence, and finally appropriate funds to enable them to operate. Congress passes authorization and appropriation bills for these programs to the President to be signed into law. These laws are the means which give the DoD and all Federal programs the authority to incur obligations and make expenditures (the payment of those obligations) for specified purposes. The appropriated funds are then passed to the DoD through OMB as an apportionment. An apportionment sets the level of funds that may be used for obligations and expenditures during a specified time period (annually, quarterly, etc.). Apportionments are used by OMB to limit the departments and agencies from spending their funds too quickly, and thus requiring supplemental or deficiency appropriations.

The DoN receives its appropriations through the management of the DoD. From the Secretary of the Navy, these funds flow through a network of management down to the operational level where they will actually be used. For example, prior to the Pearl Harbor Pilot, the Operation and Maintenance, Navy (OMN) appropriation used for intermediate maintenance at the Pearl Harbor IMF was managed by the facility's Finance Officer. His fiduciary chain of command followed with supervision by the CINCPACFLT Comptroller, the OMN Responsible Office (the Secretary of the Navy (SECNAV) budget office, N82), the Navy Comptroller (the Assistant Secretary of the Navy, Financial Management (ASN (FM)), and ultimately, the Secretary of the Navy. Each office in this chain sought to ensure the proper and efficient use of funds towards intermediate ship maintenance at Pearl Harbor.

C. CATEGORIES OF APPROPRIATIONS

Appropriations granted by Congress towards Federal programs fall under different categories, depending on their nature of business, and are classified according to their purpose, duration, and amount. With regard to duration, appropriations are categorized as either annual, multiple year, or no-year.

The United States Federal fiscal year extends from October 1st until September 30th. Annual appropriations must be obligated during the fiscal year specified in the appropriation act. The OMN appropriation is an annual appropriation and is used for most organizational-level and intermediate-level ship maintenance. One of its purposes is for funding the maintenance costs of ships and other types of DoD equipment and weapon systems.

Multiple year appropriations are available for use over a specified time period greater than one year. For example, the Shipbuilding and Conversion, Navy (SCN) appropriation used for the construction and renovation of ships uses a multiple year appropriation. Its obligation availability period is five years in length.

No-year appropriations are those that support working capital funds. Working capital funds, or revolving funds, work on a reimbursable principle and are not constrained by fiscal year limits. The OMN appropriation used for most depot-level ship maintenance is an example of the use of the Navy Working Capital Fund and a no-year appropriation.

D. BUDGET EXECUTION

Annual appropriations are apportioned on a quarterly basis throughout the fiscal year to prevent obligation or expenditures in excess of the appropriation. For Defense spending, this tight control flows from the OMB to the DoD (USD(C)). The USD(C) then allocates funds to each service, which then further allocates the funds down to the Responsible Office (SECNAV's N82), Administering Offices, and the Major Claimants. Allocation is the control by which the services delegate the use of funds to ensure Congressional intent is met.

Major Claimants, such as Commander-in-Chief, Pacific Fleet also receive their OMN funds on a quarterly basis to help prevent over-obligation of their budget. It then issues planning limitations (a certain dollar allowance, or Operating Target (OPTAR)) to its subordinate commands on a quarterly basis and ensures that the commands execute their budget according to their previous budget request. Once an activity obligates 100 percent of its funds, its operations must cease for the remainder of the fiscal year, unless it can find additional or redistributed funding from higher in its chain of command or receives a supplemental or deficiency appropriation from Congress. A supplemental appropriation grants additional budget authority to existing appropriations for activities or programs that are deemed too critical to run short of funds. A deficiency appropriation is granted after a fiscal year has completed and additional funds are made available to a "deficient" appropriation to give it a positive balance.

Another consideration that annually appropriated or mission funded activities must face is the fact that Congress and the President often do not complete the appropriation process before the turn of the new fiscal year. When this occurs, Congress typically passes a Continuing Resolution to extend budget authority to specified activities. These funds are made available not as a dollar amount, but rather as a rate at which the activities may incur obligations in the new fiscal year until the appropriation bills are signed into law. Without a Continuing Resolution, appropriated funded activities must cease operations.

Additionally, towards the end of the year, should additional funding appear to be required to perform mission-critical functions, mission funded activities have to petition their chain of command for more money. If no funds are available for redistribution within the command, and assuming Congress did not pass a supplemental appropriation for that specific purpose, the mission funded activity would cease operations until the new fiscal year's funds become available. This is a risk or lack of flexibility for maintenance activities and their use of annual appropriated funds. The ability to continue important maintenance actions can be impaired at the end of the fiscal year should maintenance costs exceed annual appropriations.

E. PERFORMANCE AT THE NAVAL INTERMEDIATE MAINTENANCE FACILITY, PEARL HARBOR

Prior to the Pearl Harbor Pilot, the Naval Intermediate Maintenance Facility (NIMF) at Pearl Harbor operated as a stand-alone maintenance activity, performing intermediate maintenance upon Navy ships and submarines. It operated under mission funding, receiving its budget authority from the OMN appropriation. Funding of its operations provided for material, facilities, and civilian salaries. Salaries of military personnel working at the NIMF were excluded, as mission funded activities do not account for this category. Rather, military personnel are paid separately through the Military Personnel, Navy (MPN) appropriation.

Like all other mission funded activities, the NIMF was tied to an annual budget and was restricted from exceeding its budget. By aggressively tracking obligation rates throughout the fiscal year and by meeting quarterly financial performance goals, the NIMF was able to control the operations so as to meet its budget requirements.

Throughout this research, there were no significant funding shortfalls noted among the pre-consolidation NIMF operations. Analysis of the NIMF's fiscal year-end financial statements immediately prior to the Pearl Harbor Pilot shows 100 percent obligation of its authorized funds. [Ref. 2] However, these statements do not portray work-in-progress that may have been halted as a result of maintenance costs running greater than the activity's appropriated funds. Critics of the Pearl Harbor Pilot cite this potential funding gap as a reason to maintain depot-level maintenance under a WCF because of the year-end flexibility to continue operation not provided by appropriated funds. This risk will be further addressed in the conclusions of Chapter V.

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IV. THE PEARL HARBOR PILOT

A. REGIONAL MAINTENANCE HISTORY

Streamlining Naval maintenance received much attention in the 1990s with the downsizing of the U.S. military and directives such as the Chief Financial Officer Act of 1990 and the Government Performance and Results Act of 1993 calling for focused improvements with measurable results. Then CNO, Admiral Frank Kelso, responded with the Regional Maintenance Program and began the movement of the integration of intermediate-level and depot-level maintenance throughout the Fleet. In 1996, the RMP continued under the following CNO, Admiral Mike Boorda, as he approved intermediate-level and depot-level maintenance in the Northwest and Mid-Atlantic regions. In April 1997, the next CNO, Admiral Jay Johnson ordered ownership of the depot-level maintenance facilities transferred to the Fleets. Later that same year in July, Admiral Johnson directed the RMP process be accelerated and to identify immediate consolidation candidates.

Given the conveniences of a single, confined harbor, the logical first candidate for intermediate-level and depot-level maintenance consolidation was Pearl Harbor. Admiral Archie Clemins, Commander-in-Chief of the U.S. Pacific Fleet during this time stated, "the vision of Navy Regional Maintenance is to consolidate maintenance activities within a region to reduce the cost of maintenance while preserving waterfront responsiveness." [Ref. 9]

B. CHANGE BEGINS: SUMMARY OF EVENTS LEADING TO THE PEARL HARBOR PILOT

The movement toward intermediate-level and depot-level maintenance consolidation began in 1994, when the two intermediate-level maintenance facilities then at Pearl Harbor, the Submarine Base Intermediate Maintenance Activity and the Shore Intermediate Maintenance Activity, merged onto fifteen acres of land to become the

NIMF. This installation became the Navy's first joint submarine and surface ship intermediate-level maintenance facility. [Ref. 9]

In 1996, the Pearl Harbor Naval Shipyard reduced its workforce by nearly 20 percent, leaving a staff of 2800. Concurrent with this reduction in workforce, over one third of the billets at the NIMF were transferred from military to civilian personnel. This allowed five hundred civilians, who otherwise may have lost their jobs, to replace 700 sailors as intermediate-level maintenance workers (refer to Figure 4.2).

C. PEARL HARBOR PILOT OVERVIEW

CINCPACFLT and Naval Sea Systems Command, with the final directives from the CNO, presented the concept of merging the PHNSY and the NIMF into a single organization responsible for all ship maintenance in Hawaii. Within one year, approval was granted from the CNO to stand up the Pearl Harbor Pilot Program. CINCPACFLT and Commander, Naval Sea Systems Command (COMNAVSEA) signed a Memorandum of Agreement (MOA) delineating their individual and mutual responsibilities for the successful consolidation of the new facility, now named the Pearl Harbor Naval Shipyard and Intermediate Maintenance Facility (PHNSY & IMF) and established on April 30, 1998. [Ref. 10]

COMNAVSEA is the reporting senior, operating agent, and technical authority for the new command. CINCPACFLT is the major claimant of the PHNSY & IMF and also has overall operational and financial management responsibility. The transfer of funding responsibilities to CINCPACFLT became effective beginning in FY 1999.

All the required operational, business, financial, personnel, command, and work processes were developed to guarantee the new activity operated as a single activity with a fully integrated workforce, using integrated work processes. These included: [Ref. 10]

- Standard work documents
- Standard quality assurance programs
- Integrated Automated Information Systems (AIS)
- An operationally responsive organization

- Cost effective utilization for all resources
- A single customer interface process
- A single command structure for administration, facilities management, production, and production support

Additionally, the MOA defined other considerations for the combined facilities to implement. It directed all maintenance functions previously performed by the PHNSY or NIMF would now be performed by the new activity. The work force would consist of a completely integrated group of civilian and military personnel in order to reduce excess personnel capacity. Facilities and equipment would be consolidated with the goal of eliminating excess facilities, equipment, and duplication. Standard planning and engineering documents would be used for all work in order to streamline the planning and technical administration of ship maintenance. Supply support responsibility would be transferred to the Fleet Industrial Supply Center (FISC) Pearl Harbor to accomplish all supply functions, to include hazardous material and non-nuclear transportation management. [Ref. 10]

Finally, in order to achieve a fully integrated activity, it was necessary to establish a single financial system. This system had to capture the activities of both intermediate-level and depot-level maintenance for budget formulation and throughout budget execution. It was decided that appropriated (mission) funding, vice a revolving fund, such as the NWCF, would be used. The CNO, in cooperation with the Office of the Secretary of Defense (OSD) and Congress granted permission to convert the PHNSY from the NWCF to mission funding, to begin on October 1, 1998.

D. FINANCIAL MANAGEMENT TRANSITION TEAM

In September 1997, CINCPACFLT established a Financial Management Transition Team (FMTT) to plan and execute all actions necessary for the financial management conversion of the PHNSY from NWCF to mission funding. From the stand up date, April 30, 1998, and throughout the transition year, the new activity continued to operate and provide financial reporting under the existing financial systems then in place

at the PHNSY and the NIMF. To prepare and ease the conversion to mission funding by October 1, 1998, CINCPACFLT and COMNAVSEA funded operations to the budgeted workload from April 30 through September 30, 1998. Charges for labor and productivity measures were tracked on a statistical basis using the Shipyard Management Information System (SYMIS), the AIS used previously to track shipyard operations and costs. In accordance with the terms of the intermediate-level and depot-level maintenance facilities, the consolidated activity was mission funded in FY 1999 and used the Standard Accounting and Reporting System, Field Level (STARS-FL) for official financial reporting. However, SYMIS continued to be used for depot-level maintenance internal cost tracking and to feed obligation and expenditure data into STARS-FL. The financial management consolidation of the new activity significantly impacted the internal and external reporting of financial data. Specifically, the change affected every shipyard system that collected, used, or reported financial data, to include: [Ref. 11]

- Production Control
- Labor Cost Collection
- Material
- Services
- Management
- Financial Accounting

The FMTT membership consisted of representatives from CINCPACFLT, PHNSY & IMF, FISC, and the Defense Financial and Accounting Service (DFAS). From January through May 1998, a series of meetings were held among the members of the FMTT. These meetings successfully identified the processes, business rules, and required AIS changes to convert the PHNSY from the NWCF and integrate it with the IMF and a single appropriated funding system on October 1, 1998.

The following provides a summary of the FMTT milestones as a reference for consideration by potential organizations which may consider a shift from revolving to appropriated funding: [Ref. 11]

FMTT organized	September 1997
STARS-FL baseline requirements defined	January 1998

FMTT follow-up meetings	January, February, May 1998
AIS programming and unit tests	November 1997 – July 1998
AIS integration tests	July – August 1998
Unit training	August – September 1998
Functional acceptance test	August – September 1998
Implementation	September 1998
Pilot execution and customer support	October 1998 – September 1999

Throughout the Pearl Harbor Pilot transition year, the FMTT identified and solved the major issues that challenged the consolidation of two largely different organizations. The following is a summary of the major systems or items that were changed or overcome to enable the financial merging of the Shipyard with the Intermediate Maintenance Facility: [Ref. 11]

1. Automated Accounting Systems

Of foremost concern in the conversion of the PHNSY from a revolving fund structure to mission funding was the ability to convert the SYMIS data into a readable format for STARS-FL. STARS-FL is the single official accounting system for all Navy maintenance-related mission funded activities. SYMIS required significant manipulation and conversion of code to enable input and processing into STARS-FL. This process was developed by the FMTT and is unofficially named the "green box" which overlays shipyard financial data into the appropriated funds accounting system.

2. Unit Identification Code

A new single unit identification code (UIC) was assigned to the consolidated PHNSY & IMF, effective October 1, 1998, beginning the Pearl Harbor Pilot transition year. Along with the UIC, a new DoD Activity Address Code (DoDAAC) was required for department-wide visibility of the new organization. (DFAS) was notified of these changes for bill payment and other financial matters. New Purchase Card Accounts were established for the new UIC. Installation of STARS-FL terminals at the PHNSY with

new user accounts was required before the Pilot test fiscal year to conduct training. Additionally, the new activity identification had to be established as an authorized nuclear material user to accommodate work provided to nuclear powered submarines.

3. Payroll and Accounting Services

DFAS provided the general fund accounting, plant property, and bill paying services for the new facility beginning October 1, 1998. DFAS also changed NSY employee records and statistics from the old UIC to the new UIC.

4. SYMIS Remains as Data Source

The shipyard automated accounting system, SYMIS, remained in use to capture certain funding data, job orders, and reportable material transactions and was then linked into STARS-FL. Continuous reconciliation procedures were established between STARS-FL and SYMIS to ensure costs and authorization totals reflected the same details. However, conclusions will show these ad hoc procedures were difficult to maintain in order to provide full cost visibility of maintenance actions performed.

5. Operating Budget Setup

STARS-FL was used to monitor budget execution against the operating budget authorization. Further breakdown of the total operating budget authorization was used within the AIS to allow the PHNSY & IMF Comptroller to establish quarterly spending targets to separate departments within the activity.

6. NWCF Carryover Jobs and Buyout Costs

NWCF carryover jobs refer to depot-level maintenance that was fully funded in the year before the PHNSY & IMF consolidation and transition to mission funding. All

carryover jobs were fully accounted for under the NWCF in SYMIS until the work and final billing were complete.

Buyout costs refer to the costs associated with transferring a working capital fund activity into direct appropriations. These costs include liabilities, accumulated operating results, accrued employee leave, and undepreciated capital assets. [Ref. 12]

7. Accounting for Depot Costs

STARS-FL records depot-level maintenance costs via SYMIS and under the consolidated activity, CINCPACFLT and Pearl Harbor managers maintain that all maintenance is considered the same. However, Title 10 of United States Code, Section 2466 requires that not more than 50 percent of funds allocated for depot work in a fiscal year can be used for contractor work. This dilemma creates many questions in the minds of the Congress, who are seeking compliance with current laws regarding depot maintenance that play an effect on many civilian jobs (both public and private) at stake within their respective districts. This is not an issue in Pearl Harbor, where nearly 100% of ship maintenance is being performed at government facilities. However, depot maintenance needs to be formally recorded in order to satisfy the intent of the law.

8. Training of Personnel to Use Combined STARS-FL/SYMIS

FMTT personnel developed an integrated training plan to incorporate all revised policies, procedures, and processes of the consolidated activity. Management and supervisors were familiarized with the differences between mission funding and the NWCF. All Shipyard financial personnel were given hands-on training at the Honolulu DFAS Operating Location (OPLOC) so they could understand the STARS-FL data processing requirements

9. Information Security Issues

All software that was developed to support the Shipyard's transition to mission funding was documented and developed to meet DoD and DoN security requirements.

The activity's Information Systems Security Officer determined security certification of all new computer programming software.

E. LOCAL BOARD OF DIRECTORS

The Local Board of Directors (LBOD) was formed in November 1998, and has met monthly in order to provide advice to the Commander of the PHNSY & IMF. The LBOD consists of operational ship and submarine commanders who submit their guidance in concert with the Pearl Harbor ship maintenance and supply-chain managers. This monthly exchange of information assists in the development of maintenance scheduling that "maximizes resource utilization at PHNSY & IMF and meets operational commitments of Fleet assets within [those] funds available." [Ref. 13]

The existence of the LBOD can not be understated as a step in the right direction, whether maintenance is conducted under revolving or appropriated funds. It provides a frequent forum for communication between the operational commanders and the depot and intermediate maintenance facilities. Before the Pearl Harbor Pilot, depot ship maintenance scheduling and budgeting was forecast two years prior to the actual execution of the work. As the working capital fund budget process moved towards the year of execution, the planned work was simply assumed to be available as scheduled. In many cases, this was not to be, generating excess labor and overhead capacity at the shipyard. Currently, the schedule validation and recommendations from the LBOD have greatly coordinated scheduling and maintenance workflow to properly prioritize work and the use of fiscal resources.

F. PEARL HARBOR PILOT PERFORMANCE METRICS

In order to measure the effectiveness of the Pearl Harbor Pilot, nine test metrics were chosen to represent a variety of performance measure and issues. A Naval Audit Service (NAS) study was completed in April 1998 to establish a financial cost baseline. This study set FY 1997 as the baseline from which to measure all future successes or failures of the pilot project. The results of fiscal years 1999 and 2000 (PHNSY & IMF

discontinued the performance metrics during FY 2000 [Ref. 15]) are assessed in section F of this chapter to judge the overall effectiveness of the Pearl Harbor Pilot maintenance consolidation. The nine performance metrics were selected to give a broad picture of just how effective the consolidation efforts were. They are categorized into five components:

- Cost effectiveness
- Overhead reduction
- Customer satisfaction
- Infrastructure reduction
- Miscellaneous measures

From these five categories the nine performance metrics are described as follows: [Ref. 12]

1. Total Cost of a Maintenance Shop Direct Labor Hour of Work Delivered to the Customer

This performance measure is an indicator of efficiency in terms of the cost per direct maintenance hour. It is calculated by taking the total costs of the ship maintenance activity and dividing that figure by the total maintenance activity direct labor hours delivered. The results will be displayed in Chapter V as dollars per hour. A decrease in this figure is expected to generate a successful evaluation.

2. Total Labor Hours Expended to Deliver a Maintenance Shop Direct Labor Hour to the Customer

This metric is an indicator of productivity in terms of personnel utilization. It is found by taking the total available labor hours (overhead plus maintenance hours) and dividing it by the total maintenance activity direct labor hours delivered. The results are displayed as a ratio of hours. A substantial decrease from the FY 1997 baseline year will be viewed as a success.

3. Total Current Ship Maintenance Program (CSMP) Work Items Completed

The CSMP contains a consolidated database of significant problems of a ship. This metric is an indicator of productivity in terms of the number of these problems that were fixed. It simply reports the completed CSMP items as a relative measure of success. Therefore, more items completed indicate that more maintenance actions were conducted, irrespective of the size of the particular tasks.

4. Total CSMP Work Items in the Backlog

This metric is an indicator of the maintenance condition of Pacific Fleet ships in relation to work items not yet completed. The results display the effectiveness (or ineffectiveness) of the consolidated maintenance facility as viewed by the direct number of delayed CSMP items in the backlog.

5. Schedule Adherence of CNO Maintenance Projects

This performance measure is an indicator of customer satisfaction in regard to completing projects on schedule. It is computed by taking the total of the differences between the actual and scheduled completion dates divided by the number of days of the total scheduled duration of each CNO ship availability project. Improvements of this metric from before the Pearl Harbor Pilot indicate success of this measure.

6. Rework Index for CNO Maintenance Projects

Quality of maintenance actions are indicated by this performance measure. It is calculated by totaling the labor hours expanded to correct work deficiencies divided by the total number of direct labor hours performed upon each CNO availability maintenance project. This measure of quality is displayed as a percentage and is expected to show no degradation throughout the pilot project and beyond.

7. Activity Work Schedule Integrity Index

This measurement is another indicator of customer satisfaction. It is computed by comparing labor hours worked to labor hours budgeted throughout the fiscal year. Any decrease of this ratio will yield improvements in adhering to the maintenance schedule.

8. Casualty Reports Caused By Activity Work

This metric is an indicator of quality of maintenance as reported by the number of casualties, or equipment failures. It is measured through an analysis of reports collected within six months of completion of maintenance actions. A decrease in casualties equates to a higher level of performance of this metric.

9. Earned Value

This final performance metric is an indicator of productivity in terms of labor hours to complete similar items of work. It is measured through a statistical analysis of labor hours. Comparison between the FY 1997 baseline labor hours and FY 1999 and later years' labor hours is made to determine a relative measure of success or failure.

The results of these performance metrics paint a broad picture of the possible successes that the consolidated maintenance facility may achieve. It is important to recognize that cost savings are not supposed to be the primary reason for this major shift in business operations. Rather, it is to realize a more efficient workforce, performing more high-quality maintenance each day. Figure 2 displays the results of the nine performance metrics.

G. EVALUATION OF PERFORMANCE METRICS

The Pearl Harbor Pilot program was conducted from October 1st, 1998 through September 30th, 1999. The Pilot was generally deemed a success, although the results of the nine performance metrics were mixed. They displayed measures of improvements, unchanged performance, or decreased performance. Apparently satisfied with these

initial results and wanting to continue the development of the Regional Maintenance Program, the CNO granted approval for the joint CINCPACFLT and NAVSEA venture to continue, and the PHNSY & IMF continued its consolidated operations into FY 2000 and through to present day. The following is an evaluation of the performance metrics from the Pilot year (FY 1999) and beyond (FY 2000 (when available)): [Ref. 8, 12]

1. Measures of Improved Performance

Metric number one, cost per unit output, has achieved success in lowering the total cost of delivering one maintenance shop direct labor hour to the customer. The NAS found the combined facility to charge $149.60 in its FY 1997 baseline study. At the End of Fiscal Year (EOFY) 2000, the cost was only $136.07, exceeding the performance expectations.

Metric number two, production efficiency and resource utilization has also achieved success in reducing the total labor hours expected to deliver a maintenance shop direct labor hour to the customer. The NAS baseline study reported a 3.15 ratio in FY 1997. At the end of FY 2000, the PHNSY & IMF achieved a successful measure of 2.99. This result shows that the ability to move workers from intermediate-level to depot-level jobs had a favorable impact upon getting more work done with a fixed amount of workers.

Metric number four, material readiness of the Pearl Harbor based ships, met its expectation of having fewer than 15,960 CSMP work items in the backlog. Although this measure achieved success, there are some externally driven factors that directly influenced the backlog rather than the efforts of the Pearl Harbor Pilot. These are: [Ref. 12]

- Decommissioning of ships home-ported at Pearl Harbor resulted in less potential CSMP items.
- Increased maintenance inspections tended to create more CSMP items.
- Procedural changes in identifying work items may either increase or decrease the CSMP backlog.

Metric number seven, schedule integrity, also showed improvement by the end of FY 1999. The activity work schedule integrity index decreased slightly between the baseline year and the end of the pilot project, indicating a favorable assessment. This success was a result of the changes in maintenance procedures and efficiencies created by the consolidation of the two maintenance facilities.

2. Measures of Unchanged Performance

Metric number six, quality, did not show a significant change in performance during the Pilot test period and beyond. The FY 1997 baseline year displays a .76 percent rework of maintenance. One of the goals of the Pearl Harbor consolidation was to ensure workmanship quality did not degrade from the former Shipyard's and NIMF's previous levels. The conclusion of the Pilot period shows 1.08 percent rework of maintenance at the end of FY 1999. Even though this marks a slight decrease in productivity from the baseline year, the Navy judged this as an insignificant difference from the previous quality of work, and thus achieved a success of ensuring consistent quality of work to the customers of the Pearl Harbor consolidated maintenance activity.

Metric number eight, new casualty reports (CASREP), shows little change throughout the test period. There were only two CASREPs noted during the FY 1997 baseline year and then four CASREPs identified during the Pilot period. Although this is a 100 percent increase, these numbers are relatively low considering the thousands of work items that the consolidated activity performs each year. Therefore, these values indicate there are no significant problems with the overall quality of maintenance both before and after the Pearl Harbor Pilot.

Metric number nine, earned value, shows no overall degradation. This metric is computed by measuring labor hours to complete a unit of work during FY 1997 and comparing it to the hours to complete a similar unit of work during the Pilot year. This statistical analysis resulted in virtually no change between the baseline and the test year and beyond and is therefore inconclusive as to whether the efforts of the Pearl Harbor Pilot actually had an effect on maintaining the same level of hours to maintenance action.

3. Measures of Decreased Performance

Metric number three, maintenance actions completed, shows a significantly lower number of maintenance actions completed than desired from the Pearl Harbor Pilot performance expectations. The FY 1997 baseline year shows 19,777 items completed and the expectation was to maintain or exceed that same level of work completion. However, only 8,985 work items were completed at the end of FY 2000. This is in part due to the loss of active duty military enlisted personnel from 1,416 in 1996 to 680 in 1999 (see Figure 2 for detailed personnel trends). However, due to efficiencies in workforce assignment abilities of the consolidated activity, civilian workers were now able to be moved from different type of jobs at a moments' notice and few (less than ten at any time) were ever sitting idle in the "Excess Labor Shop." Further, the consolidated activity hired an additional 82,785 borrowed labor hours more in FY 1999 than in the baseline year. In FY 2000, the PHNSY & IMF nearly double these numbers as well. Borrowed labor hours are performed by borrowed workers from other shipyards throughout the Navy as they are made available. The second line of metric number three in Figure 4.1 normalizes this complication of personnel to derive a fair expectation of completed maintenance actions throughout personnel reductions. However, even as it is normalized, the consolidated activity fell 2,733 jobs short of expectation.

Metric number five, customer satisfaction, has also failed to meet performance expectations and achieved a schedule adherence rating of 18.6 percent late. The baseline year and performance expectations of this metric called for improved performance better than 11.4 percent of projects completed on-time. One of the factors listed as a success of the Pearl Harbor Pilot, the ability to shift workers from depot-level work to intermediate-level work (and vice-versa), now appears as a detriment to the evaluation of this metric . The process of shifting workers has tended to remove those workers needed for long-term Depot Modernization Period (DMP) projects. DMP projects are complex overhauls directed by the CNO and are generally greater than 13 months and 140,000 labor days. Short-term Fleet maintenance projects (intermediate-level work) are usually given higher priority in worker assignment decisions than are longer, more complex maintenance projects.

For example, the USS Chicago DMP was started on May 11, 1998 and was scheduled for completion on May 11, 1999. However, it was not completed until February 11, 2000. Prior to the consolidation at Pearl Harbor, all CNO directed projects were fully staffed by depot workers and these workers were not subject to being assigned to intermediate-level work. Today, there is a commonly pooled workforce from which laborers are assigned to different tasks according to the Shipyard and IMF Commanders' priorities. The nine-month delay of the USS Chicago committed workers to the project for those extended months, which then caused slippages in the completion of other long-term CNO maintenance projects.

METRIC NO.	TITLE	FY97 (Baseline Year)	Performance Expectations	FY00 (EOFY)	EVALUATION
1	Cost Per Unit Output Ensuring Total Cost Visibility	$149.60	$142.12-145.11	$136.07	Met Expectation
2	Production Efficiency and Resource Utilization	3.15	2.99-3.06	2.99	Met Expectation
3	Maintenance Actions Completed	19,777	19,777	8,985	Inconclusive
3	Maintenance Actions Completed (Normalized)	19,777 (1.69 per enlisted)	11,718 (1.69 per enlisted)	8,985	2,733 jobs short of Expectation
4	Material Readiness of the Pearl Harbor Based Ships	17,733	15,960	15,218	Met Expectation
5	Customer Satisfaction – Schedule Adherence	11.4% (Late)	Better than 11.4%	18.6% (Late)	Includes Chicago DMP (2.7% Late without Chicago)
6	Quality	0.76%	No Degradation	1.08%(FY99)	Maintained Quality
7	Schedule Integrity	1.23	Decrease is Improvement	1.16 (FY99)	Improvement
8	New CASREPs	2	Decrease is Improvement	4 (FY99)	Maintained Quality Note 1
9	Earned Value	Statistical Method – Not One Number	Results of Analysis	Statistical Method, No one number (FY99)	No Degradation in Earned Value Note 2

Notes:
1) Very small number of CASREPs indicates quality of work remains excellent.
2) The differences are so small that they are statistically insignificant. Earned Value remains unchanged.

Figure 2. Pearl Harbor Pilot FY00 Scorecard of Performance Metrics [From Ref. 8]

H. OTHER MEASURES OF PERFORMANCE

1. Personnel Efficiencies

The Navy's largest benefit in the Pearl Harbor Pilot consolidation has been that of integrating two separate workforces into one. Approximately 4,000 workers have been integrated from two separate units into a common labor pool, allowing management the ability to shift workers between intermediate-level and depot-level maintenance assignments. Before consolidation of the Shipyard and the Intermediate Maintenance Facility, it was difficult to make such personnel reassignments because the two organizations operated under separate command and financial structures. The variations in the workloads between the two organizations created situations of excess labor on any given day, leaving 100 to 200 workers assigned to the "Excess Labor Shop" to perform menial duties. Once consolidation occurred, managers were able to shift personnel as necessary to fill shortages on critical maintenance projects. Thus, the daily number of workers assigned to the excess labor shop quickly dropped below ten. Today, this issue has become so insignificant that excess labor is no longer measured. [Ref. 14]

2. Streamlining Infrastructure

Another key success factor of the Pearl Harbor Pilot has been the physical reduction of maintenance infrastructure. For example, the U.S. Naval Base at Pearl Harbor supported 167 buildings, 85 structures, and 262 acres in 1996 for the segregated Shipyard and IMF. Today, that footprint has been reduced to 166 buildings, 81 structures, and 220 acres, generating an estimated savings of over $300,000 per year in reduced infrastructure and operating costs for those facilities. There are also long-range plans looking forward to FY 2008 to continue these infrastructure reductions and to accomplish the required levels of maintenance with a streamlined facility footprint. These draw-downs project reductions to 92 buildings and 54 structures situated upon 112 acres. [Ref. 8] These projections equate to 45% reduction of buildings, 36% reductions of structures, and 57% reduction in acreage from the 1996 levels.

I. CRITICS OF THE PEARL HARBOR PILOT

The most critical response regarding the results of the Pearl Harbor Pilot came from the General Accounting Office (GAO). GAO acts as the investigative arm of the Congress and exists to support the Congress in meeting its Constitutional responsibilities of ensuring Federal programs are generating the desired results. In its January, 2001 report, "Depot Maintenance: Key Financial Issues for Consolidation at Pearl Harbor and Elsewhere Are Still Unresolved," GAO concludes,

> "Although managers and workers performing ship maintenance and repairs at Pearl Harbor may not be directly affected, the lack of reliable cost and performance data impairs the ability of senior OSD and Navy officials to make timely, well-informed decisions to facilitate the effective and efficient management of the Navy's overall ship maintenance activities, the Pearl Harbor consolidation, and other potential consolidations of ship maintenance activities. More specifically, to provide senior OSD and Navy officials reliable cost and performance data to facilitate their decision-making process, the Navy needs to implement a method that includes appropriate costing methodologies or techniques that provide sufficient data to (1) adequately identify and account for the total cost of operations, (2) distinguish between depot and intermediate work performed by consolidated ship maintenance activities, and (3) show compliance with 10 U.S.C. 2466, the Chief Financial Officer Act, the Government Performance and Results Act, DoD regulations, and federal accounting standards." [Ref. 12]

Additionally, the report recommended that the Congress require the Secretary of the Navy to report the following: [Ref. 12]

- Strategy and timeline for resolution of buyout costs for the consolidated maintenance activity to transfer costs from the Navy Working Capital Fund.
- Strategy to overcome the loss of flexibility to continue ship maintenance operations through potential funding gaps at the commencement of fiscal years or when maintenance costs exceed annual appropriations.
- Strategy for funding for the consolidated facility's capital improvement.

Obviously, the GAO has some substantial doubts regarding the success of the Pearl Harbor Pilot and the future consolidations proposed by the Navy's Regional Maintenance Program. The Department of Defense concurred with all of the findings of the GAO study and indicated that "future evaluations will draw upon lessons learned from the Pearl Harbor Pilot consolidations." [Ref. 12]

Regardless of the GAO concerns, the general feeling throughout the PHNSY & IMF is one of a job successfully completed and of having done the "right thing." As mentioned above in the GAO comments, "managers and workers performing ship maintenance and repairs at Pearl Harbor may not be directly affected" by the deviations from standard cost collecting procedures under a working capital fund system which ensures total cost visibility. However, they are directly affected by the benefits that have generated a workforce that is more responsive to the daily demands of intermediate-level and depot-level ship maintenance at Pearl Harbor.

V. CONCLUSIONS

A. EVALUATING THE ACCOMPLISHMENTS OF THE PEARL HARBOR PILOT PROJECT

The Pearl Harbor Pilot Project officially ended on September 30, 1999. Based upon the results of the Pilot and for the Navy to obtain a clearer picture of the advantages and disadvantages of the consolidation, the PHNSY & IMF was granted approval to continue its operations under appropriated funding through and beyond present day. The consolidation of intermediate-level and depot-level naval ship maintenance in Hawaii has generated improved operations by making more effective use of personnel, facilities, and equipment. However, overall results of the consolidation are mixed. Evaluation of the nine performance metrics with the most recent data show four measures of improvement, three measures of no change, and two instances of reduced performance as compared to the FY 1997 baseline year.

Applying these performance metrics appears to have undermined, to some extent, the sense of accomplishment of CINCPACFLT and the PHNSY & IMF. In fact, as the consolidated maintenance facility at Pearl Harbor continues operation, these metrics have been disregarded as irrelevant and are no longer measured. Instead, it focuses strictly on budget execution as an appropriated fund activity, simply ensuring it does not over-obligate its apportionment of funds. As the Navy's Regional Maintenance Program continues and prepares to expand to different shipyards and maintenance facilities, the Navy is developing a set of "National Metrics" for use in future intermediate-level and depot-level maintenance consolidations. [Ref. 15] The next scheduled facility to convert to appropriated funding is the Puget Sound Naval Shipyard (PSNSY). This conversion is currently suspended, awaiting further analysis by the DoN and OSD. [Ref. 5] Once developed, the National Metrics will address the Pearl Harbor Pilot's areas of concern and will again be applied to measure the level of success of all consolidated maintenance activities.

1. Challenges

The greatest challenge that the Pearl Harbor Pilot faced was change. Merging two independent organizations with separate command structures, financial systems, and work routines into a consolidated organization required much planning, fortitude, and teamwork. With regard to the merging of financial systems, the Financial Management Transition Team was faced with a major consolidation of information from two complex information management systems. The conversion of a Navy Working Capital Fund system to an appropriated fund system implies major differences in the way financial transactions are processed. These changes impact the entire activity's basic business processes. All personnel, from the commander down to the newest laborer must understand the changes that impact their everyday operations.

There has been much attention paid to the Pearl Harbor Pilot from agencies outside the Navy. The General Accounting Office (GAO) twice visited Pearl Harbor to report on the consolidations' progress. The reports that GAO provides are viewed as authoritative and carry much weight throughout Washington D.C. with the Congress, the DoD, and other influential stakeholders. As such, the Pearl Harbor Pilot is a controversial project because it defied many set patterns of operation and involved the transformation of several thousand civilian jobs.

2. Benefits of Consolidation

The benefits of the Pearl Harbor Pilot are realized mainly in the efficiencies of personnel, facilities, and equipment management. Over 4,000 workers from two separate facilities were merged into a common labor pool, thus increasing management flexibility in assigning workers to maintenance projects. [Ref. 12] Because of this consolidation, the Navy was able to reduce its facilities and equipment footprint, reducing the number of buildings and the corresponding equipment in the maintenance complex.

The Pilot also realized some benefits through stabilized labor rates. The cost per unit of output decreased over thirteen dollars per hour during the FY 1999 and FY 2000 test years. Production efficiency and resource utilization also achieved success in

reducing the total labor hours expected to deliver a maintenance shop direct labor hour to the customer.

Other benefits were the decreased number of Consolidated Ship's Maintenance Plan work items in the Shipyard's backlog and improvements in overall schedule adherence.

3. Drawbacks of Consolidation

The Pearl Harbor Pilot project attracted much scrutiny regarding the concern of whether a shipyard could, or should, be operated in conjunction with the IMF as a mission funded activity. There was no doubt that the CNO's Regional Maintenance Program called for this type of consolidation of operations and accounting for naval ship maintenance, but still many interested parties had reservations concerning the feasibility of the changes at the consolidated maintenance activity. As stated earlier in the conclusions, change was the greatest challenge to the success of the Pilot project. There were many growing pains associated with the details of merging two organizations with a combined annual budget in excess of $375 million. [Ref. 8]

B. ADVANTAGES OF APPROPRIATED FUNDING

There were many advantages associated with the PHNSY & IMF consolidation under appropriated funding. The main reason an appropriated funding system was decided upon, vice consolidating under the Navy Working Capital Fund, was because CINCPACFLT contributes over 90 percent of the work provided to the Shipyard and Intermediate Maintenance Facility. [Ref. 14] Therefore, CINCPACFLT has a great deal of control over the flow of repair work that could potentially be delayed and could greatly damage the financial solvency of the revolving fund activity (i.e. less work equates to higher rates per unit of work). A "customer to seller" relationship between the Fleet and the Shipyard did not truly exist under the former PHNSY working capital fund system because CINCPACFLT had nearly all control over the flow of work to the Shipyard.

Another advantage to appropriated, or mission, funding is that the financial system is much more simple. It operates on a 100 percent obligation of funds principle, ensuring that quarterly goals are being met throughout the year. There are no worries about achieving a net operating revenue goal, or taking a loss over the course of a fiscal year in order to maintain a stabilized rate for work produced.

A third advantage to mission funding is that now the consolidated Shipyard and Intermediate Maintenance Facility has the potential to create increased cost visibility for all levels of maintenance. Since the consolidation occurred, the Shipyard Management Information System fed its data into the Standard Accounting and Reporting System, Field Level. This gives the ability for all levels (organizational, intermediate, and depot) of maintenance actions to be input to SYMIS to show additional levels of cost details. However, because this is a complicated process, it typically is not accomplished to a significant degree. In everyday practice, this has become a disadvantage of appropriated funding, as will be discussed in the next section.

C. DISADVANTAGES OF APPROPRIATED FUNDING

As an appropriated fund activity, the PHNSY & IMF now has to focus upon its budget execution to ensure it does not over-obligate its apportionment of funds. This is a disadvantage of the consolidated maintenance activity's use of appropriated funds because this practice tends to discount the advantages that increased cost visibility may provide for management decisions. The General Accounting Office expressed this concern in its January 2001 report and recommended that the Navy "implement a method to account for the total cost of consolidated ship maintenance operations on an *ongoing* basis." [Ref. 12] Although the PHNSY & IMF claim they have increased total cost visibility, they do not have a well-established method for displaying such data in a consistent method. This is most likely the result of the complicated daily management of the SYMIS and STARS-FL interface, which is overly burdensome in achieving the desired level of consistency in cost tracking.

A second disadvantage to the consolidated activity's use of appropriated funding is that every dollar is scrutinized by the fiscal chain-of-command: CINCPACFLT,

NAVSEA, Resource Sponsors, and ASN(FM&C). The Shipyard's funds are now in competition for other programs that use the same limited appropriation. It is ironic that now, the consolidated maintenance activity's budget is open for review to make cuts, or marks, whereas under the Navy Working Capital Fund, the stand-alone Shipyard's resource sponsors did not visualize the "taxes" and other "corporate costs" for centrally managed programs. These costs were protected within its revolving fund operations. [Ref. 15]

Another disadvantage of appropriated funding is that every obligated dollar expires after September 30th each fiscal year. Therefore, there is no incentive to save money towards the end of the year. Doing so only makes the activity a target for budget reductions the following year. This "spend it or lose it" mentality pervades all appropriated fund activities, and is simply an inefficient, although unintended, creation of the federal appropriations system.

The use of mission funding at the PHNSY & IMF creates the disadvantage of funding unscheduled, high priority jobs first, at the expense of scheduled maintenance projects. Under revolving fund operations, all work, regardless of priority was funded up front with a project order. Because there is now a limited amount of appropriated funds available throughout the year, the consolidated Shipyard & IMF Commander must decide (aided by the Local Board of Directors) which projects to fund first in order to get the most amount of Fleet critical maintenance accomplished. In several instances, routine work-in-progress was halted, while personnel and funds were immediately transferred to a higher priority job. This practice affected the timely completion of Depot Modernization Period projects (which of course, also delayed the ships' future deployment schedules) at Pearl Harbor, as shown in the results of Metric number five, customer satisfaction.

One final disadvantage for the operations of the consolidated activity under appropriated funding is the loss of flexibility to continue routine ship maintenance operations at the beginning of new fiscal years or through potential funding gaps when appropriations are not made available or have been completely obligated. [Ref. 12] The Navy Working Capital Fund provides insurance against these possibilities, as funds are

available for work without regard to fiscal year limits. The supplemental funds granted towards continuing operations at the PHNSY & IMF during the past two years ($19 and $20 million during FY 2000 and 2001, respectively) illustrate lackluster performance, as well as the complexity, of the consolidated facility to properly budget its work schedule versus constrained fiscal resources. [Ref. 17]

D. MARINE CORPS DEPOT-LEVEL MAINTENANCE IMPLICATIONS

1. Background

The Marine Corps operates two depot maintenance activities, one located at Albany, Georgia, and the other at Barstow, California. These maintenance centers maintain similar capabilities, and are primarily responsible for the repair, rebuild, and modification of all types of ground combat and combat support equipment. They also have the secondary mission of providing limited intermediate-level maintenance capabilities to the same equipment. The Marine Corps maintenance depots operate under the Navy Working Capital Fund structure. Along with this funding structure, the depots have often achieved substantial losses in annual net operating results and the resulting accumulated operating results, but events are underway to streamline AOR losses at the Marine Corps depots. [Ref. 18]

Not unlike the Pearl Harbor Naval Shipyard, the Marine Corps maintenance depots experience difficulties in forecasting the workload from their customers two years in advance of execution. However, the past two fiscal years have generated relatively large revenues for the Albany and Barstow depots. FY 2001 resulted in over $209 million of revenue for the two USMC depot facilities and the years' NOR was $19 million. FY 2000's NOR was likewise impressive, at nearly $17 million with over $215 million of revenue. [Ref. 19]

However, fiscal years 1999 and 1998 ended with large negative NORs and substantially less revenue was generated due to less maintenance throughput. What were some of the influences to mark this turnaround? Included below is a description of

current events at the USMC depots which highlight an institutional desire for efficiency within the existing working capital fund structure.

2. Discussion

Throughout the past several years, the Navy Comptroller has annually requested the Marine Corps to justify the reasons why its depot-level maintenance operations should continue under the NWCF as opposed to transforming these maintenance operations under an appropriated funding system. Reasons for this annual review of funding source stem from the challenges of developing an effective and realistic budget, the limited base of customers who utilize the Marine Corps maintenance depots, and simply striving to find the best financial management practices possible.

The Marine Corps is no different from any other service in its challenge to create and maintain an accurate budget. Under a revolving fund system, both the customer and the provider of service must establish an agreed upon level of work to correspond to the customer's expected annual budget and the customer's expected demand of work. However, since this is typically established nearly two years prior to the budget year in question, the actual demand for work, and thus the rates for the performance of that work, will contain large variances.

As revolving fund activities, the Marine Corps depots offer their services to any customer who is willing to pay the going rate for the performance of maintenance. Historically, these depots provide approximately 95 percent of their maintenance efforts towards Marine Corps ground equipment customers. The remaining five percent of work is performed on a cost-reimbursable basis for other military services and agencies. This situation parallels the relationship between the former Pearl Harbor Naval Shipyard and CINCPACFLT. If the Marine Corps provides the large majority of work to its depots, is this truly a "customer-seller" relationship?

3. KPMG Study

In 1998, the Klynveld Peat Marwick Goerdeler (KPMG) consultant group was contracted to study Marine Corps depot maintenance and provide a list of funding options with the goal of "maximizing the efficiency of customer repair dollars." [Ref. 20] KPMG arrived at three options for the Marine Corps to explore: [Ref. 20]

1. Continue operations with revolving funds (with modifications).
2. Convert operations to be funded with direct appropriations.
3. Convert operations under a combination of revolving and direct funds.

Option three was disregarded as too complex. The procedures involved in using a combination of funding were determined to have too many conflicting regulations and business standards to compliment one another towards a more efficient organization.

Option two, although many advantages exist, was ultimately disregarded during this study for all the same disadvantages described above (as pertaining to the Pearl Harbor Pilot).

Option one, therefore, was endorsed as the method of which to embrace, with modifications to support improved financial performance. The modifications proposed were the implementation of Activity Based Costing (ABC) principles towards the everyday operations, execution of funds throughout the year, and budgeting towards the future.

ABC is an accounting method that helps achieve true cost allocation and visibility. It provides management the ability to allocate costs to each function of business (operations, activities, products, or customers). [Ref. 20] ABC enables both direct and indirect costs to be traced to each task. By accurately assigning costs to each business function, the depots can obtain a more complete picture of what their stabilized billing rates should be in order to achieve a balanced NOR, and thus an AOR equal to zero.

With the Marine Corps depots achieving a negative NOR of over $8 million and $13 million in FYs 1998 and 1999 respectively, Marine Corps Material Command

(MARCORMATCOM) quickly responded to the KPMG recommendations and began implementing the ABC accounting principles. [Ref. 19]

Remaining within the Navy Working Capital Fund structure, Marine Corps depots have maintained the funding flexibility which no-year appropriations are privileged. Additionally, the stabilized rate process enables the depots to understand all costs and thus, react quickly to cost drivers, enabling the maintenance facilities to provide quality work at the most competitive price. [Ref. 20]

As stated earlier, the most two most recent fiscal year endings have recognized significant positive NORs from Marine Corps depot maintenance facilities. As such, MARCORMATCOM can now pave its way towards achieving decreases in unit cost and increases in throughput of work as stated in its 2001 Strategic Business Plan to "become the source of repair for depot maintenance." [Ref. 21]

For the same reasons the Chief of Naval Operations ordered the Regional Maintenance Program and the Congress enacted the Chief Financial Officer Act and the Government Performance and Results Act, the Marine Corps should keep its collective eyes open to the best financial management practices available. The Pearl Harbor Pilot provides a case study, rich with lessons learned, regarding the advantages and disadvantages of revolving funds versus appropriated funds.

E. RECOMMENDATIONS FOR FURTHER STUDY

1. Why Not Revolving Funds?

A study exploring the possibility of the Pearl Harbor Naval Shipyard and Intermediate Maintenance Facility to be reorganized under the Navy Working Capital Fund, would be a useful counter to the conclusions of this thesis. What are the reasons the Navy has been reluctant to implement its Regional Maintenance Program at other shipyards? Will the Navy continue the RMP using the NWCF? If so, will Pearl Harbor be directed to follow suit?

2. Marine Corps Depot Conversion to Appropriated Funding

A study focusing purely on the Marine Corps depot-level maintenance possibility of converting to appropriated funding would be a useful update to past inquiries of the same subject. This seems to be a controversial topic. What are the issues? Who are the stakeholders? Why does the Marine Corps choose to remain in the Navy Working Capital Fund for its depot-level maintenance?

3. Marine Corps Depot Maintenance and ABC

Document the Marine Corps' success or failure in implementing Activity Based Costing at its depot maintenance facilities. Propose any additional funding considerations not previously explored.

LIST OF ACRONYMS

ABC	Activity Based Costing
AIS	Automated Information System
AOR	Accumulated Operating Result
ASN (FM)	Assistant Secretary of the Navy (Financial Management)
CASREP	Casualty Report
CFO	Chief Financial Officer
CINCPACFLT	Commander in Chief Pacific Fleet
CNO	Chief of Naval Operations
CNO N82	Chief of Naval Operations Financial Management Responsible Office
COMNAVSEA	Commander Naval Sea Systems Command
CSMP	Consolidated Ship's Maintenance Plan
DBOF	Defense Business Operation Fund
DFAS	Defense Financial and Accounting Service
DMP	Depot Modernization Period
DoD	Department of Defense
DoDAAC	Department of Defense Activity Address Code
DoN	Department of the Navy
FISC	Fleet Industrial Supply Center
FMTT	Financial Management Transition Team
FY	Fiscal Year
G&A	General and Administrative
GAO	General Accounting Office
GPRA	Government Performance and Results Act
HQMC	Headquarters Marine Corps
IMF	Intermediate Maintenance Facility
KPMG	Klynveld Peat Marwick Goerdeler
LBOD	Local Board of Directors
MARCORMATCOM	Marine Corps Material Command
MOA	Memorandum of Agreement

MPN	Military Personnel Navy
NAS	Naval Audit Service
NIMF	Naval Intermediate Maintenance Facility
NSY	Naval Shipyard
NWCF	Navy Working Capital Fund
O&M	Operation and Maintenance
OMB	Office of Management and Budget
OMN	Operation and Maintenance Navy
OPTAR	Operating Target
OSD	Office of the Secretary of Defense
PBD	Presidential Budget Decision
PHNSY	Pearl Harbor Naval Shipyard
PHNSY & IMF	Pearl Harbor Naval Shipyard and Intermediate Maintenance Facility
PPBS	Planning, Programming, and Budgeting System
PSNSY	Puget Sound Naval Shipyard
RMP	Regional Maintenance Program
SCN	Shipbuilding and Conversion Navy
SECNAV	Secretary of the Navy
SRF	Ship Refit Facility
STARS-FL	Standard Accounting and Reporting System, Field Level
SYMIS	Shipyard Management Information System
UIC	Unit Identification Code
USD(C)	Under Secretary of Defense (Comptroller)
USMC	United States Marine Corps
WCF	Working Capital Fund

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